

X. *Descriptions of some new exotic species of Lucanidæ.*  
By J. O. WESTWOOD, M.A., F.L.S., &c.

[Read 1st May, 1871.]

By the kindness of Dr. Howitt of Melbourne, and Major F. J. Parry, I am enabled to offer to the Entomological Society, descriptions and figures of a number of new species of this interesting family, by way of further supplement to the different articles which have appeared, from time to time, in the Society's Transactions, upon these insects.

The great additions which have been made, to our knowledge of this group during the last twenty years, have rendered necessary the breaking up of the old genera *Lucanus* and *Dorcus* into minor groups, or subgenera, and the most interesting species to be described in this communication is sufficiently distinct from previously separated groups, as to render necessary the proposal of another, with the name:—

RHÆTULUS (Parry, MS.).

Corpus oblongum, subdepressum. Caput et pronotum sub lente granulata subopaca; elytra parum nitida punctatissima. Labrum porrectum transversum, in medio marginis antici paullo angulato-productum; mandibulæ magnæ, curvatæ, contortæ; antennæ longæ, clava 3-articulata. Pedes longi, tibiæ 4 posticæ in medio 1-calcaratæ. Prothorax lateribus crenatis haud spinosis.

Species unica, RHÆTULUS CRENATUS, mas.

(Plate VIII. fig. 4.)

Piceo-niger, elytris magis castaneo-nigris; mandibulis capite duplo longioribus, valde curvatis, et in medio elevatis, apicibus depressis fortiter bifidis, margine antico vel supero basin versus dento parvo conico erecto, et in medio denticulis numerosis obtusis, armato; pedibus antennisque nigris, tibiis anticis denticulis circiter 14 instructis.

Long. corp. lin. 15; mandib. lin.  $6\frac{1}{2}$ .

Hab.—In Insula Formosa. In Mus. Parry.

This insect, to which Major Parry has given the name above employed, is most nearly allied to *Rhætus Westwoodii*, from which it is sufficiently (subgenerically) distinct, by the smaller size of the head (which in that insect is as large as the prothorax), by the upper surface of the head and prothorax being entirely covered with minute granulations, rendering them subopaque (instead of being polished); by the elytra also being covered with minute punctures, scarcely visible, except under a lens, but giving them a less brilliant appearance than they have in *Rhætus*; in the anterior tibiæ being denticulated throughout their outer edge, in the two posterior tibiæ being armed with a small tooth on the middle of the outer edge (as well as the two middle tibiæ), one of which, indeed, exhibits trace of a second rudimental tooth; in the regular crenation of the sides of the prothorax, destitute of the two teeth on each side visible in *Rhætus*; in the disc of the head wanting the two elevated spaces between the eyes, which leave the centre depressed in *Rhætus*, and lastly, in the smaller size of the insect.

The head is transverse, with a small raised tubercle in front of each eye; the anterior lateral angles being oblique, punctate, and slightly emarginate. The labrum is porrected, transverse, the lateral anterior angles acute, and the middle of the fore-margin moderately produced into an angle. It is similarly granulose with the remainder of the upper-side of the head. The antennæ have the seventh joint produced into an acute spine, the sixth being also larger than the fifth. The maxillæ are elongate, the outer lobe long, and strongly setose. The mentum is broad at the base, the sides very oblique, and the middle of the anterior margin very slightly emarginate; it is not only granulate, but marked with large round shallow punctures. The labium is bi-partite, moderately setose, and the labial palpi have the basal joint elongated. The prothorax is transversely quadrate, with the anterior and posterior lateral angles oblique, the lateral margins finely crenated, the disc convex, and marked close to the middle of the anterior margin with a small polished space. The sides and hinder margin are distinctly elevated into a slender margin; the suture of the elytra is polished, and the sides and apex of the elytra are margined. The anterior

tibiæ are armed throughout the whole length of the outer edge with about fourteen teeth, those next the base gradually diminishing in size, the larger ones being wider apart, with minute crenations between them. The middle tibiæ are armed with one spine in the middle of the outer edge, behind which is to be perceived the very minute rudiment of the second spine. The two hind tibiæ have only a single spine on the same situation. The under-surface of the body is moderately glossy and black, the prosternum is grooved down its centre between the anterior coxæ, and the mesosternum is quite simple.

In Major Parry's collection is preserved a female specimen brought from Formosa by Mr. Swinhoe, which may possibly be the other sex of *Rhætulus crenatus*, but which it would be rash, without further information, to describe as such at present. It is eleven lines long, black and polished, the head small and rugose, the sides of the head in front of the eyes very oblique, forming a large canthus extending over two-thirds of the length of those organs. The labrum is small, rugose, as well as the mandibles, which are armed with a small tooth in the middle, and when shut close at rest, forming a triangle, advanced in front of the head scarcely more than half its length; the prothorax and elytra are minutely punctured, the punctures at the sides and along the hind margin of the prothorax more strongly and thickly disposed. The sides of the prothorax are margined and crenated; one tooth, opposite the humeral angle of the elytra, being slightly more prominent than the rest. The anterior tibiæ are crenated with about ten stronger teeth on the outer margin; the middle tibiæ are armed with a central spine in the middle of their outer edge, which is delicately crenated, and they have a very minute rudimental spine in front of the large middle one. The two hind tibiæ are armed only with a single central spine.

#### NOTE ON RHÆTUS WESTWOODII.

The precise habitat of the original specimen of *Rhætus Westwoodii* was unknown, but Major Parry has recently obtained a second individual from the Himalayas. Hence he is induced to consider it probable, that the Himalayan

female *Dorcus derelictus*,\* may be the opposite sex of *Rhætus*, whilst at the same time he entertains the opinion that *Dorcus rudis*, Westw., is the female of the insect described below, under the name of *Dorcus ratiocinativus*. I have entered into the consideration of this opinion, in the observations upon *D. rudis*, given in a subsequent page.

In his original description of *D. derelictus*, Major Parry was so struck with the "utterly anomalous slender anterior and unarmed posterior tibiæ," and other characters, as to doubt whether the specimen were really a female, or a male with short ill-developed mandibles, and whether the insect ought not to be removed to the genus *Eurytrachelus*; whilst in his memoir, in 1870, he considered it nearer to *Cladognathus* and *Odontolabis*. The specimen having been dissected by Mr. C. Waterhouse, has proved to be a female, as confirmed by a subsequent examination of the mouth-organs, which I have been enabled to make by the kindness of Major Parry, and which are noticed in my observations on the sexual relations of *D. rudis*.

DORCUS RATIOCINATIVUS, n. s.

(Plate VIII. fig. 2, male.)

Niger, prothorace et elytris parum castaneo-tinctis, capite opaco pone oculos subangulato, mandibulis capitis longitudine, falcatis dente medio suberecto armatis, prothorace transverso quadrato, lateribus subparallels, angulis posticis lateralibus truncatis, denticulo parvo utrinque instructis, pronoto et elytris subnitidis et sublævibus.

Long. corp. lin. 11; mand. fere lin. 2.

*Hab.*—Himalaya. In Mus. Parry.

This small species is of a narrow oblong form, the thorax being scarcely broader either than the head or

\* *Dorcus derelictus*, Parry.

Proc. Ent. Soc. Lond. 1862, p. 112; Trans. Ent. Soc. 3rd, s. v. 2, pp. 50, 90; 1870, p. 92, pl. xi. f. 3.

*D. elongatus niger nitidus*, capite inter oculos bituberculato; mandibulis obsolete unidentatis; elytris lævissimis subparallels; tibiis posterioribus extus subcurvatis, inermibus, intermediis unidentatis.

Long. corp. (mand. incl.) unc. 1, lin. 5.

*Hab.*—Ind., or Himalayas. Coll. Parry.

elytra, it is subconvex; the head is broad, nearly flat above, and subopaque, being seen, with a strong lens, to be entirely covered with very minute granules, placed closely together; the sides behind the eyes are slightly angulate, the canthus extends half the length of the eyes; the anterior lateral angles in front of the canthus being obliquely truncate, and slightly emarginate; the labrum is short and transverse, with the fore-margin straight, and fringed with short fulvous hairs; the mandibles are about the length of the head, sickle-shaped, and acute at the tips; the basal portion is concave, the outer angle (in front of the eyes) being dilated, in the middle they are armed with a strong nearly erect spine. The maxillæ are moderately long, the lobes clothed with long hairs, the inner lobe being simple; the mentum has the lateral anterior angles rounded, and the fore-margin nearly straight. The prothorax is transverse, with a slender raised margin all round its circumference; it has the sides nearly parallel, terminating behind in a small tooth, behind which the lateral angles are obliquely truncate, the anterior margin is rounded towards the head; the disc is convex and polished, with the outer angles finely punctured. The elytra are oblong, convex and polished, and, seen under a lens, covered with very minute punctures.

The anterior tibiæ are armed with seven small teeth on the outer edge, and the four hind tibiæ have a small spine in the middle of each.

Major Parry is inclined to believe that this insect is the male of *D. rudis*, next described.

#### DORCUS RUDIS.

(Plate VIII. fig. 3.)

♀. Totus niger, rude punctatus; elytris costatis interstitiis punctatissimis, capitis angulis anticis lateralibus obliquis, oculis septo dimidiatim incisus; prothoracis angulis posticis oblique emarginatis; elytris angulo humerali prominenti notatis.

Long. corp. (cum mandibulis) lin. 10.

*Hab.*—India vel Insulis Indicis? In Mus. D. Parry.

*Dorcus (Prosopocoilus?) rudis*, Westw., Trans. Ent. Soc., ser. 3, vol. ii. p. 35 (1864).

*Cladognathus rudis*, Parry, *loc. cit.*, p. 35.

*Dorcus rudis*, Parry, *Trans. Ent. Soc.* 1870, p. 112.

The original female type of this species is here more carefully re-figured, in order to afford comparison with the male *Dorcus ratiocinativus* (Plate VIII. fig. 2) which Major Parry is inclined to regard as its genuine male. The precise habitat of this female specimen is, unfortunately, not known, and it is from analogy only that Major Parry has been led to the supposition of its being the female of the Himalayan insect. Should Major Parry's suggestion that *Dorcus derelictus* is the female of *Rhætus Westwoodii* prove to be correct, we shall, I think, be scarcely warranted in adopting his view as to the sexual relationship of the two former insects, since the great difference between the two females far outweighs the close affinity existing between the two males.

Thus, although the structure of the mouth organs, especially the hooked inner lobe of the maxillæ, mentum, and labium, with its palpi, are quite alike in the two females; the mandibles of *D. derelictus* are straighter, and curved, with two teeth on the inner edge; the head is bicornute, and but slightly punctured, the prothorax being almost impunctate, with the lateral margins regularly rounded; the elytra also impunctate, except at the sides; the fore tibiæ very slender, and with about seven very small denticulations on the outer margin, the middle tibiæ with a single spine in the middle, and the hind tibiæ unarmed in the middle; differing in all these respects from *D. rudis*, the male of which will, no doubt, prove to be a very distinct creature from the genuine male of *Dorcus derelictus*.

#### DORCUS SUTURALIS, n. sp.

(Plate VIII. fig. 5.)

Obscure niger, elytris subopacis, regione scutellari et suturali glabrata, capite transverso, labro brevissimo, transverso, antice emarginato; mandibulis capite duplo longioribus, falcatis; dente crasso submedio antice parum prorecto armatis, mento lato, cicatricoso.

Long. corp. lin.  $16\frac{1}{2}$ ; mandibul. lin. 5.

*Hab.*—Pungi, Himalaya. In Mus. Parry.

The head is transverse, with the sides, including the lateral canthus of the eyes, nearly parallel; the hinder angles behind the eyes rounded; the canthus extends backwards half the length of the eyes, in front of each of which is a lateral depression. The labrum is very short, transverse, broad, with the fore-margin moderately emarginate. The mentum is broad, with the lateral anterior angles rounded, the disc marked with shallow cicatricose punctures. The mandibles are sickle-shaped, twice the length of the head, with a large, nearly central, tooth arising on the upper edge, and slightly porrected. The prothorax is transverse, with the front rather wider than the head, having the anterior angles slightly dilated and rounded, and the hind ones oblique; the disc is entirely even, without sulci or impressions, the whole, like the head, being opaque, and, when seen with a strong lens, entirely covered with exceedingly minute granulations. The elytra are oblong, slightly wider in the middle, where they are equal in breadth to the middle of the prothorax; they also are opaque, except along the sides of the suture and about the scutellum, where they (as well as the scutellum itself) are polished; the humeral angles are elevated. The disc is destitute of costæ or sulci. The fore legs have the tibiæ rather narrow, and armed with about eight teeth on the outer margin. The four hind tibiæ are also rather slender, with a spine on the middle of each on the outer edge.

DORCUS GLABRIPENNIS, n. sp.

(Plate VIII. fig. 6.)

Niger, subopacus, elytris glabris, capite prothorace minori, ante oculos parum dilatato, labro brevi, transverso, margine antico recto, mandibulis capitis longitudine, dente forte conico medio, denticulisque duobus inter hunc et apicem armatis, prothoracis lateribus antice rotundato-dilatatis, angulis posticis obliquis; elytris prothorace angustioribus, costis nonnullis, valde indistinctis, notatis; Mas.

Long. corp. lin. 15; mand. lin.  $3\frac{1}{2}$ .

*Hab.*—In India orientali, Kasyah Hills. In Mus. Parry.

This insect is about equal in size to the preceding, but the mandibles are shorter, and the polished elytra, marked with several very indistinct costæ, distinguish it from that species. The head is transverse, narrower than the

prothorax, with a slight obtuse angle on each side behind the eyes; the canthus extends about half through the eyes, and is but slightly dilated in front of them. The labrum is short, transverse, with the fore-margin nearly straight, the anterior lateral angles prominent and acute. The mandibles are about the length of the head, they are falcate, acute at the tips, with a large triangular flattened tooth in the middle of the inner edge, beyond which, or rather arising on the anterior edge of the tooth itself, is a very minute tooth, and there is another equally minute and erect on the upper edge near the tip, and so placed that it is not visible when seen vertically. The mentum is very broad, with the anterior lateral angles rounded, the fore margin nearly straight, and the disc (like the remainder of the head, except the jugulum) covered with very minute granulations when seen with a lens, and marked with large shallow cicatricose punctures. The upper surface of the head is almost flat and even, with a very slight trace of a depression in the middle near the prothorax. The prothorax is wider than the head, but very slightly convex on the disc, the centre of which exhibits a very faint longitudinal depression; the anterior half of the lateral margin is dilated and rounded, and the hinder angles are oblique; the whole of the lateral and posterior sides have a slender, but distinct, margin; the upper surface is very delicately granulated like the head. The elytra are narrower than the prothorax, moderately convex, polished, but when seen with a lens they are delicately punctured; the humeral angles are prominent, and the disc of each is marked with several very indistinct raised longitudinal lines, scarcely visible beyond the middle. The anterior tibiæ are moderately slender, finely crenulated on the outer edge with six marginal teeth; the four hind legs are moderately slender, with a spur in the middle of the outer edge of each of the four posterior tibiæ; the prosternum is rather wide, with a groove between the base of the fore-legs; the metasternum and abdomen are polished, and delicately punctured.

NIGIDIUS PARRYI, Bates.

(Plate VIII. fig. 1, male.)

“Oblongus, niger, nitidus; capite quam thorax paulo angustiore, lateribus ante oculos rotundato-dilatato haud



angulato, fronte depressa sparsim minus grosse punctata; mandibulis maris porrectis, apice recurvatis, supra rugoso-punctatis, absque dente erecto, intus obtuse dentatis; thorace angulis anticis obtusis, margine laterali antice incrassato, medio valde emarginato, angulis posticis late rotundatis, supra lævi, nitido, sulco dorsali abbreviato rugoso, plaga parva utrinque laterali punctata; elytris late punctato-sulcatis."

Long. mand. excl.  $11\frac{1}{2}$  lin.; mand.  $1\frac{1}{2}$  lin. Mas.

*Nigidius Parryi*, Bates, in Proc. Zool. Soc. 1866, p. 347.

*Hab.*—In Insula Formosa. In Mus. Parry.

"A more elongated insect than the other two continental Asiatic species (*N. cornutus* and *N. obesus*), and differing from all the allied species in wanting the erect tooth, or horn-shaped dorsal apophysis of the mandibles. The sides of the head are rounded before the eyes, and not produced into a point; the thorax has the lateral margin excavated in the middle. The sulci of the elytra are wide and deep, and have a chain of foveæ, but are destitute of the lines of fine punctures seen in *N. levicollis*; the interstices are narrow, polished, and impunctate."

In addition to the above character given by Mr. Bates, it is to be noticed that the clypeus is produced in front into an obtuse point, the disc of the head is furnished with a central impression, deepest behind. The eyes are completely divided by the canthus; the maxillæ have the inner lobe armed with a strong horny tooth, which leads me to suppose that the specimen described by Mr. Bates and the one here figured, are females. The mentum is very deeply emarginate in front, and widely punctured; the anterior margin of the pronotum is narrowly depressed, strongly punctate, behind which the disc is raised on each side, with a sharp small central raised tubercle. The striæ of the elytra, near the suture, are slightly curved, and not parallel therewith; the anterior tibiæ have seven or eight teeth on the outer margin, and the four hind tibiæ have a rather strong central spine, preceded, in the middle pair by three, and in the hind pair by two, more minute spines.

## LISSOTES FURCICORNIS, n. sp.

(Plate IX. fig. 3.)

Niger, punctatissimus; elytris magis cicatricosis; prothorace maris transverso quadrato, lateribus rectis; capite latissimo ad angulos anticos tuberculo elevato instructo; mandibulis maris magnis, furcatis, furcis æqualibus, interna sub-porrecta subconica, apicali conica erecta; prothoracis dorso leviter canaliculato; elytris dimidiatim costatis.

Long. corp. ♂ lin.  $6\frac{1}{2}$ - $7\frac{1}{2}$ ; mand. lin. 1: ♀ lin. 7.

*Hab.*—In Alpibus Victoriae Australasiæ. D. Howitt, ♂ ♀. In Mus. Oxoniæ.

This species is well distinguished by the transversely quadrate prothorax, and furcate mandibles of the male, the two branches of the furcation being of nearly equal size. The head of the male is transverse, regularly sloped from the crown to the front; the sides rather square, the anterior angles truncate, with each end of the truncature rounded; the lateral angle behind the eye is also rounded, in front of each eye is an elevated obtuse tubercle; the disc of the head is strongly punctured; the labrum is very shortly and slightly trilobed and setose; the mandibles of the male are about the length of the head, strong and much curved, they have a minute angular internal projection at the base, and they are deeply cleft in the middle, into two large nearly equal sized obtuse teeth, of which the inner is horizontal, and exhibits traces of one or two notches below the apex; the outer or upper tooth is somewhat vertically elevated. The mentum is transverse, with the anterior lateral angles rounded off; it is strongly punctured, with the anterior margin setose, and conceals the maxillæ and labium; the former have the terminal lobes moderately setose, the inner one being rather longer than the outer, and produced into a straight point in the male, but in the female (fig. 3e) it forms a strong acute hook. The labium is somewhat vase shaped, strongly setose in front, and the labial palpi have the basal joint slender and slightly curved, the second joint short, and the third somewhat clavate and curved. (In figure 3c, the labium and palpi are represented as detached from the inner surface of the mentum, in front of which they are placed separately, to show their relative size and form.) The prothorax in the male is much shorter than wide, being slightly wider than the head, with the lateral

margins nearly straight and parallel, with a slender lateral slightly crenulated edge. The disc is not so rudely punctured as the head, the punctures placed irregularly, so as to leave various small polished spaces; the disc has a slight central impression, widest across the centre, and a smaller one on each side; the hinder angles are rounded, and the middle of the hind margin straight. The scutellum is very small and triangular. The elytra are narrower than the prothorax in the male, with the sides nearly parallel; they are rugosely and irregularly punctured, and cicatricose, with the suture a little elevated; they have two ill-defined costæ on the disc, extending from the base to beyond the middle; the apex of the elytra is regularly rounded. The legs are rather slender; the anterior tibiæ with seven or eight small teeth on the outer edge, and the four posterior tibiæ with a small central spine on the outer edge.

The female is smaller than the male, and elongate ovate, with the head small, and destitute of the tubercles of the male; the mandibles small and curved, with a central tooth on the inner edge. The prothorax has the lateral margins rounded, somewhat narrowed towards the head, and crenulated with a slight central depression, and a small smooth space on each side. The elytra are more ovate, quite as broad as the prothorax, the whole upper surface is more thickly punctured than in the male; the legs are slender, the outer edge of the fore tibiæ with only five teeth. The mentum in this sex is wider in front than behind, and strongly punctured.

I am indebted to Dr. Howitt for both sexes of this species, obtained by him from the Alps of Victoria, about sixty miles north-east from Melbourne, the female being very rare: and have adopted the manuscript name proposed by him for the species. I also purchased a specimen of the male from Mr. Du Boulay's collection, but was unable to ascertain whether he had collected it himself, at Swan River, or had obtained it from some other collector in Australia.

LISSOTES LATIDENS, n. sp.

(Plate IX. fig. 4.)

Mas. Niger, punctatissimus, capitis angulis anticis oblique subtruncatis, canthi oculorum angulo postico rotundato, mandibulis fere capitis longitudine, curvatis,

apice obtuso, intus basin versus dente maximo quadrato armatis ; prothoracis lateribus subrotundatis.

Long. corp. fere lin. 7 ; mand. fere lin. 1.

*Hab.*—In Insula Maria et littora versus Tasmaniae. D. Howitt. In Mus. Oxoniae.

The singularly robust tooth near the base of the inner edge of the mandibles, the oblique anterior angles of the head, and the rounded lateral margins of the prothorax, distinguish the males of this species.

The whole surface is strongly and closely punctured, the punctures of the elytra being more elongated and occasionally confluent ; the head is narrower than the prothorax, with a slightly prominent tubercle on each side at the base ; the anterior angles of the head are obliquely rounded off, the posterior portion of this lateral margin being thin, and forming the canthus of the eye. The labrum is small, and very slightly produced ; the mandibles are about as long as the head, strongly curved and sickle-shaped, the tip obtuse, and the inner edge furnished with a large, nearly square and flattened tooth, emarginate on its inner edge, as though it were formed of two obtuse teeth which had become confluent ; beneath, this broad tooth is convex, and finely punctured. The mentum is transverse, with the anterior angles rounded and the surface punctured ; the prothorax is transverse, wider than the head, and as wide in the middle as the widest part of the elytra (which are represented in figure 4 as rather too wide across the middle) ; the disc of the prothorax has a slight longitudinal central depressed line, and there is a small rounded impression between the middle and the lateral margin ; the posterior part of the lateral margins of the prothorax are rounded off, but the hinder angle itself, on each side, is very slightly produced opposite the humeral angles of the elytra. The scutellum is minute, and on each side of the suture of the elytra is an impressed longitudinal line, formed by a series of confluent punctures, of which also there are several others on each elytron, which do not extend beyond two-thirds of their length. The legs are moderately slender, the anterior tibiae with five or six obtuse teeth on the outer margin, and the four posterior tibiae with a small spine in the middle of their outer edge.

Dr. Howitt kindly sent me a specimen of the male of this species, of which sex he had seen five specimens; the individual forwarded to me not being much more than half the size of one of his examples. They are from Maria island, and the east coast of Tasmania.

The female is unknown.

LISSOTES LAUNCESTONI, n. sp.

(Plate IX. fig. 1.)

Gracilis, subdepressus, niger punctatissimus, mandibulis maris curvatis, apice subporrectis, intus ultra medium dente subovato composito, armatis; prothorace transverso caput versus paullo angustiori.

Long. corp. lin. 6; mand. lin. 1.

*Hab.*—Launceston, Tasmania; mense Martis. D. Howitt. In Mus. Oxoniæ.

I am indebted to Dr. Howitt for a specimen of the male of this species, which, as he remarks, is "much like *L. obtusatus*, but narrower in form, with the mandibles more long and slender. I have never seen a specimen of this form from the south of Tasmania; the female is equally elongate with the males." It differs, moreover, in its depressed elytra, and in the much more strongly punctured upper surface of the body, especially of the prothorax.

The head is narrower than the prothorax, with the front part semicircularly sloping down to the labrum, which is minute and conical, with a small slightly raised tubercle on each side, near the base of the mandibles; the lateral margins of the head, in front of the eyes, are obliquely truncate and thin, the hind part forming an obtuse canthus of each eye. The mandibles are about the same length as the head, each with a small triangular tooth near the base of the inner margin, the apex porrected and obtuse, with a somewhat oval tooth, or dilatation, on the inner edge of the mandible, beyond the middle, on which are the obtuse rudiments of tubercles.

The prothorax is transversely subquadrate, the lateral margins slightly inclining towards the head, the centre of the disc being slightly impressed with a longitudinal

channel; the elytra are of equal width with the prothorax, and are more thickly produced than the other parts of the body; they have the lateral margins nearly parallel, the disc marked with several very faint longitudinal carinæ, and the sutural portion is flattened.

The legs are moderately slender, the anterior tibiæ with a few small irregular teeth, and the four hind ones with a small spine in the middle of their outer edge.

This species is destitute of wings.

LISSOTES FORCIPULA, n. sp.

(Plate IX. fig. 2.)

Piceo-niger, brevis, punctatus, subconvexus, labro conico porrecto, mandibulis maris falcatis; apicibus parum cochleatis, sub bi-vel tridentatis, lateribus capitis ante oculos obliquis et attenuatis, lateribus prothoracis obliquis, fere rectis et tenuiter marginatis et crenulatis, angulis posticis rotundatis, disco vix longitudinaliter in medio impresso; elytris brevibus subovatis et subconvexis punctatissimis; tibiis anticis dentibus 5 extus armatis.

Long. corp. ♂ (cum mandibulis) lin. 6 ( $\frac{1}{2}$  unc.); long. elytror. lin. 3.

*Hab.*—Tasmania. Mus. Oxon. (♀), et Parry (♂).

This species is nearly allied to *L. crenatus*, but differs from it in the narrower and much less convex form of the male, which has a much smaller head and smaller mandibles; it has also the upper surface of the body (especially of the head and prothorax) much more strongly and closely punctured; the labrum, conically produced, is also smaller, and the mandibles are less strongly toothed at the apex. It is distinguished from the male of *L. obtusatus*, and its allies, both by its shorter form and differently constructed mandibles. The head is transverse; the anterior portion forming a large semicircular depressed space, extending from the outer angles of the base of the mandibles nearly to the hind margin of the head; the front of this space is nearly smooth, but the hind part is covered with widely dispersed circular punctures; the lateral margins of the head in front of the eyes are oblique and thin, rounded off to the front incision

of the eyes; the labrum is conical, and advanced as far as inner produced base of the mandibles, which are sickle-shaped, dilated at the apex into a somewhat spoon-shaped extremity, the right mandible terminating in two obtuse unequal teeth, whilst the left mandible is obliquely truncate at the tip, with two or three slight incisions, forming a broad obtuse compound tooth. The prothorax in the male is transverse, convex, smooth, with moderately large round punctures, which are almost obsolete towards the anterior margin; the lateral margins are slightly crenated and oblique, but nearly straight; the anterior angle not acute, and the posterior angles rounded off. The elytra are short, subovate, convex, covered with small oval punctures, with two or three very slightly marked longitudinal carinae on each, one towards the suture being the most distinct.

The anterior tibiae are 5-dentate on the outer edge, the two teeth at the apex being the largest.

LISSOTES FORCIPULA, fem. ?

(Plate IX. fig. 6a, b.)

In the Hopeian Collection is preserved a small female specimen of a Lucanideous species, which Major Parry is inclined to regard as the female of the above described *L. forcipula*. Until, however, we are able to obtain more decisive evidence of its identity, it will be advisable simply to record its existence. It is rather more than five lines long; black, glossy, and thickly punctured. The head is small, nearly flat in the middle of the anterior portion, with a small round tubercle on each side, near the base of the mandibles; the punctures of the head are larger and more distinct than those of the prothorax; the labrum is transverse, with the middle of the front margin porrected into a conical point; the prothorax is much wider than the head, with the lateral margins narrowly curved towards the head, and finely crenulated; the posterior margin rounded, with the posterior lateral angles rounded off. The elytra are much shorter than those of *L. obtusatus*, fem.; they are subovate, widest across the middle, each shoulder forming a sharp angle. The disc is covered with small oblong punctures, and the apical half finely rugulose; the punctures on the disc

form two or three almost indistinct longitudinal striæ, in consequence of their being more or less confluent; the anterior tibiæ have five teeth on their outer edge, of which the second is by far the strongest.

Plate IX. fig. 6a, represents the head and prothorax of this female insect; and fig. 6b, the anterior tibia.

There is no locality attached to the specimen, but I believe I received it from Tasmania.

*LISSOTES SUBCRENATUS*, n. sp. (♀).

(Plate IX. fig. 5a, b.)

*Piceo-niger nitidus punctatissimus*, labro transverso, antice vix bisinuato, lateribus capitis ante oculos oblique truncatis, lateribus prothoracis subrotundatis, angulo postico laterali parum prominulo.

Long. corp. lin.  $4\frac{1}{2}$  (9 mill.).

*Hab.*—Tasmania. In Mus. Parry.

I am only acquainted with a single female of this insect, which differs so much from the females of the other known species of the genus, that I am reluctantly compelled to describe it as distinct, in the absence of its male.

It is considerably smaller than the *L. crenatus*, female; the head and pronotum are much more numerous and closely punctured, the disc of the head is flat, and gradually slanting; the sides, between the eyes and the outside of the base of the mandibles, are obliquely truncate and depressed, so as to leave a slight longitudinal carina on either side running backwards from the mandibles; the anterior canthus of the eyes is rounded off. The labrum is transverse, with the lateral angles rounded off, and the fore-margin very slightly bisinuate, the central portion formed by this bisinuation not more prominent than the side portions. The mandibles are small, curved, dilated inwards at the base, the apex of each forming a strong conical tooth, below which is a second smaller tooth, unequal both in size and position, in the two mandibles; the prothorax is transverse and convex, the anterior lateral angles slightly rounded; the disc with a slight central longitudinal channel; the sides are regularly curved and subserrate, the widest part being



beyond the middle, the posterior lateral angles are slightly prominent. The elytra are subovate, convex, setose, covered with oval punctures, considerably smaller than those of the pronotum, with two or three very slightly marked slender costæ on each. The anterior tibiæ are very broad, and bidentate at the tips, with two smaller teeth on the middle of the outer edge.

LISSOTES HOWITTANUS, Westw.\*

(Plate IX. fig. 7a, b, c, d.)

Dr. Howitt having been so kind as to send me specimens of both sexes, of this very remarkable species, from the alps of Victoria, I am enabled to supply the omissions in my original description, by giving the characters of the female, and illustrating the parts of the mouth of both sexes.

The female is as large as the male, being one inch and two lines long; glossy black; the head is much smaller than that of the male, and much narrower than the prothorax, it is strongly swollen on each side behind the eyes, the upper and under portions of which are entirely separated by the canthus (as in the male); the front of the head slopes down gradually, forming a large semi-

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\* *Dorcus Howittanus*, Westw., Trans. Ent. Soc. Lond., 3rd ser., vol. 1, pl. 21, fig. 1. *Lissotes* (Sect. II.) *Howittanus*, Parry, Trans. Ent. Soc., 3rd ser., vol. 2, pp. 90, 97. *Lissapterus Howittanus* (Deyrolle) Parry, Trans. Ent. Soc., 1870, p. 114.

The genus *Lissapterus* of Deyrolle, to which this insect is assigned by Major Parry in his last Catalogue of the family, must be unpublished, since I am unable to find any such, either in his Memoir in the 'Ann. de la Soc. Ent. France,' for 1864; or in the 'Ann. Soc. Ent. Belge,' for 1865, vol. ix. From the name, it may be inferred that, the apterous condition of *D. Howittanus* had induced its generic separation, but, both sexes of *L. obtusatus*, and as we have seen above, the male of *L. Launcestoni* (which cannot be separated from the other Australian species) are destitute of wings. A more important character, namely the unarmed condition of the inner lobe of the maxillæ of both sexes of *D. Howittanus*, as well as the singular cucullated head of the male, might suffice for the establishment of a separate generic group, but they seem outweighed by the identity in the general characteristics of the species. The inner lobe of the maxilla is also destitute of a hook in *L. crenatus* (see Trans. Ent. Soc., n. s., vol. 3, pl. xii. f. 3b).

circular depression, with a tubercle on each side near the base of the mandibles. The latter are short, subtriangular, with two teeth on the inner edge.

Plate IX. fig. 7a, represents the head of the male (reduced in size in comparison with fig. 7c, which represents the head of the female). The broad tooth on the inner edge of each of the mandibles of the males, is more conspicuous in some individuals than in others; thus, in my figure of the male above referred to, it is scarcely perceivable.

The maxillæ in both sexes are simple, those of the female being destitute of the strong hook at the extremity of the inner lobe. Fig. 7b, represents the maxilla of the male; and 7d, that of the female.

The prothorax of the female is transverse, with the lateral margins rounded, the anterior portion being as wide as the hinder; the disc is covered with punctures, those of the centre being smaller than the rest, without any of the smooth spaces or the rude punctures seen in parts of the prothorax of the male. The elytra are much more punctate than the male, the punctures extending to the extremity, and there is a broad, flat, smooth stria on each elytron adjoining the suture, as well as two on the disc of each, separated by punctures, which gradually disappear beyond their middle; the legs resemble those of the male, the anterior tibiæ of the male being armed on the outer edge with several (three or four) minute teeth, which are not represented in the figure published in *Trans. Ent. Soc.* 3rd ser., vol. I. pl. xxi. f. 1. The anterior tibiæ of the female exactly resemble those of the male.

In several of his memoirs on this family (especially in the *Transactions of the Entomological Society* for 1864 and 1870), Major Parry has suggested that the unique insect in the British Museum from Moreton Bay, which I described under the name of *Dorcus Pelorides* (*Trans. Ent. Soc.* 3rd ser. vol. I. pl. xxi. fig. 2) may be the female of *L. Howittanus*. This supposition is now disproved by the discovery of the true female by Dr. Howitt. The chief distinctions between these two females may be thus contrasted.

*D. Howittanus.*

Body subconvex; with parallel sides: upper surface of body strongly punctured.

Lateral anterior angles of the head with a sharply defined oblique ridge extending towards the middle of the crown.

Canthus of the eye moderate, entire.

Hind angles of the head moderate.

Prothorax with a depressed space on each side towards the anterior lateral angles.

Elytra costated, costæ flattened, the intervening spaces strongly punctured.

*D. Pelorides.*

Body subdepressed, of a more elongate ovate form: upper surface of body very glossy and slightly punctured.

Lateral anterior angles of the head with a raised round tubercle near the base of the antennæ.

Canthus of the eye forming a rounded, flat, exerted lobe.

Hind angles of the head strongly produced.

Prothorax with an impressed puncture towards the posterior lateral angles.

Elytra not costated, nor strongly punctured.

Note on *Lissotes cancroides*.

(*Lucanus cancroides*, Fabr.)

The original type specimen of this species, described by Fabricius and figured by Olivier, is now preserved in the British Museum, and does not exactly agree with any specimens of the genus since received from Australia. It is a male measuring seven lines in length, not including the mandibles, which are one line long; the head has the crown gradually sloping to the anterior edge, not retuse, as it is in the specimens which have been named *curvicornis*; the anterior lateral angles are oblique, slightly emarginate, their posterior part forming an obtuse canthus, extending a short distance into the front of the eyes; the head behind the eyes is wider than the middle, and produced into an obtuse tubercle, and there is a raised tubercle on each side behind the outer base of the mandibles, which agree with those of the specimens, which I have termed *sub-tuberculatus* (Trans. Ent. Soc., n. s. 3, p. 215, pl. xii. f. 2). The prothorax is transversely quadrate; the anterior margin bisinuate, with a small simple (not bipartite) raised

tubercle in the middle, close to the fore-margin; the anterior lateral angles are slightly produced in front, and rounded, and the sides are slightly emarginate at about one third of their length from the front angles; the posterior angles are obtuse, the junction of the lateral and hind-margin being indicated by a minute angular projection; the disc of the prothorax is nearly smooth and impunctate, with a central, rather strong longitudinal sulcus, which is deeply punctured; the prothorax is narrower than in *D. obtusatus*, with the sides much less strongly punctured than in *D. subtuberculatus*; the elytra are more elongate and narrower than in the specimens usually named *L. caneroides* and *obtusatus*, and much less strongly setose at the sides, they are also not so strongly or so thickly punctured as in the allied species. The anterior tibiæ are armed with ten teeth on the outer edge, those nearest the femora being very much diminished in size.

The description of this species given by me in the Entomological Magazine (vol. V. p. 267), was taken from the original individual, at that time in the possession of the Linnean Society; but in the coarse wood-cut several minute details were omitted, such as the frontal tubercle of the prothorax (which appears in my original drawing), the peculiar form of the canthus of the eyes, and posterior angles of the prothorax, &c.

M. Boisduval has given a description, in the voyage of the "Astrolabe" (p. 234), of an insect said to be from New Guinea, in the collection of M. Dupont, under the name of *L. caneroides*, which "diffère un peu de l'individu figuré par Olivier." He describes the prothorax as marked with two impressed foveæ, and the elytra as pubescent, covered with punctures "avec quelques côtés tres peu marquées." It is probably distinct from Olivier's insect.

In the British Museum a female belonging to this genus, from Melbourne, is labelled as the female of *L. caneroides*, but I believe that identification is simply conjectural; the head is strongly punctured, the angle of the canthus in front of the eyes strongly defined, the crown gradually sloping to the anterior margin, the prothorax destitute of a frontal tubercle, the surface punctured all over, but more delicately on each side of the

central sulcus; the posterior lateral angles are obtuse, and slightly emarginate. It is  $7\frac{1}{4}$  lines long, including the mandibles.

From the preceding observations it would appear, that these Tasmanian species may be thus distinguished, so far as the males are concerned.

A. Those with the posterior lateral angles of the prothorax oblique, with a prominent angle opposite the shoulders of the elytra.

a. Those with the fore-margin of the prothorax anteriorly produced in the middle.

\* Prothorax with a small central frontal polished tubercle. 1. *L. caneroides*.

\*\* Prothorax with two small tubercles conjoined in middle of front margin of prothorax. 2. *L. subtuberculatus*.

b. Those with the fore-margin of the prothorax straight; front of head strongly retuse. 3. *L. curvicornis*, Latr.

B. Those with the posterior lateral margins of the prothorax rounded.

4. *L. Launcestoni*.

5. *L. obtusatus*.

6. (?) *L. obtusatus*, var. *dimidio minor*, mandibulis multo minoribus, dente apicali cum dente lato medio coalito.

Mount Wellington, March, 1866. Dr. Howitt.

### Explanation of Plates.

#### PLATE VIII.

- Fig. 1. *Nigidius Parryi* (slightly magnified); 1a, maxilla; 1b, mentum; 1c, antenna.
2. *Dorcus ratiocinativus*, ♂ (nat. size); 2a, maxilla; 2b, mentum, and one of the labial palpi; 2c, terminal joints of antenna.
3. *Dorcus rudis*, ♀ (rather magnified); 3a, head, seen from above; 3b, maxilla; 3c, mentum; 3d, labrum and labial palpi.

Fig. 4. *Rhatulus crenatus*, ♂ (nat. size); 4a, underside of the head with basal portion of one of the mandibles, showing the jugulum, mentum, labial hairs, and terminal joint of the labial palpi, and end of one extremity of the second joint of the other maxillary palpus; 4b, one of the eyes, seen laterally, showing the canthus extended into its upper part; 4c, right mandible, seen laterally from within; 4d, maxilla with its palpus; 4e, mentum, seen within, showing the labium and labial palpi; 4f, one of the antennæ (mis-lettered 4c, in middle of the right side of the plate).

5. *Dorcus suturalis*.
6. *Dorcus glabripennis*.

PLATE IX.

- Fig. 1. *Lissotes Launcestoni*, ♂; 1a, head slightly magnified.
  2. *Lissotes forcipula*, ♂; 2a, head much magnified.
  3. *Lissotes furcicornis*, ♂; 3a, head magnified; 3b, maxilla; 3c, mentum, with the labrum and palpi detached from within the mentum, and represented in front of the latter; 3d, head and prothorax of ♀; 3e, maxilla of ditto; 3f, mentum of ditto.
  4. *Lissotes latridens*, ♂; 4a, head much magnified.
  5. *Lissotes subcrenatus*, ♀, head and prothorax; 5b, anterior tibiæ.
  6. *Lissotes forcipula*, ♀? (see pp. 367, 368).
  7. *Lissotes Howittanus* (see p. 372).
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